

Sick buildings health risk for workers, but easy to fix

Mold, poor ventilation often found as causes

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Adults spend a quarter of their lives in the workplace. If that workplace has poor indoor air quality, employees may feel sick at work, but better when out of the office. Commonly called sick building syndrome, poor indoor air quality causes headaches, dizziness, nausea, respiratory problems, difficulty concentrating, sensitivity to odors, and irritation of eye, nose or throat.

While employers may not want to hear when employees feel sick at work, the best solution is to address the problem right away, says Joe Boatman, owner of Quality Environmental Services in Boulder. "It could not only be affecting employee health, but it would definitely also be affecting employee sick leave and it could potentially be affecting the structural integrity of the building," as in the case of mold, he said.

Sick building syndrome can be caused by molds and bacteria, new office furniture and carpeting, poor ventilation, or infiltration of outdoor pollutants, such as vehicle exhaust and smoke, into a building. If symptoms occur only in the workplace, this indicates there might be a problem. Another clue is if multiple workers complain of symptoms.

In many cases, workers may not speak

up for fear of being fired, and employers may be resistant to hearing about sick-building problems out of fear of litigation. But when indoor air quality is improved, experts say workers use less sick leave and productivity increases.

Prevention of sick-building illnesses could save U.S. companies up to \$58 billion annually, according to studies by the Lawrence Berkeley National Laboratory in Berkeley, Calif. The financial benefits of improving office environments are estimated to be eight to 17 times greater than the cost of conducting such improvements.

"You want to find out what the culprit is and get rid of it if it's bad," said Bo Shaffer, chief executive and chief investigator of Longmont-based Delta Tech Planetary Ecologists. Both Shaffer and Boatman, who have been doing environmental inspections for 15 and 11 years, respectively, said they have only run into a few cases where they did not find and resolve a problem.

In one case, Shaffer found that a woman's car, not her work environment, was making her sick. "Most of the time employees report symptoms that are consistent with the problem," Boatman said. The proof comes when the situation is mitigated and the symptoms disappear, he added.

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Some people are more sensitive than others. Boatman has found that women generally are more sensitive than men. And some individuals may be hypersensitive.

Shaffer advises rather than being dismissed, these individuals should be listened to. "There are certain sensitive people that can act as a bellwether for when there are larger problems," Shaffer explained. "These are the people to listen to because they will react earlier than anybody else."

In some cases, exposures to pollutants can sensitize people so they become less able to tolerate other exposures. Those with multiple chemical sensitivity, also called TILT (Toxicant-Induced Loss of Tolerance), are one such example. "They got one exposure to one particular toxin, and it sensitized their system to large families of (other) toxins," Shaffer said. "They are like the canary in the mine."

When certified industrial hygienists or indoor environmental quality consultants evaluate a building, they conduct a thorough walk-through and interview those who are having symptoms. They also may

test the air, take mold samples and conduct other tests. If problems are found, they will make recommendations for mitigation.

The cost for evaluating commercial buildings depends on the amount of time, materials and lab work required. For Boatman, the range is between \$500 and \$20,000. The upper end reflects jobs that required extensive oversight. He charges a flat fee of \$350 to do an inspection of residences, which includes testing. Shaffer charges \$100 an hour for



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Joe Boatman of Quality Environmental Services in Boulder demonstrates how a biological sampler can be used to measure airborne molds in a building or home environment.

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both commercial and residential environmental investigations, which does not include testing.

Dan Motisi, environmental manager for Disaster Restoration Inc., a company originally headquartered in Boulder and now located in Denver, conducts hazardous materials cleanup, methamphetamine and mold remediation, structural restoration, and fire, flood and water mitigation. Motisi said the cost of remediating mold problems can run anywhere between \$1,500 and \$50,000.

Despite the dry climate, commercial and residential buildings in Colorado can have mold problems, Boatman said. "Molds need three things to grow: a food source (a wood or paper product), carbon dioxide and a source of moisture," he said. Boatman declined to provide the name of the company, but said one business he worked with received a number of complaints of respiratory symptoms from its employees. Upon investigation, he found that air from a moldy crawl space underneath the workers' floor was coming up into the work area. Once the workspace was isolated from the crawl space air, the employees' symptoms went away.

In other situations, people may do things that directly cause poor indoor air quality, Boatman said, like using oil paints and solvents without proper ventilation and air filtration, or burning candles that contain lead-based wicks. Scented plug-in room deodorizers also can make people sick. But in the case of candles and deodorizers, the problems are easily remedied. "These are things that I recommend against using," he said, "because they make people ill."